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ABSTRACT

Management procedures were successfully employed to decrease the frequency of first grade children leaving small instructional centers. To decrease the out-of-center behavior, access to a 30-minute special activity time was made available to different groups as a function of everyone remaining within his group instructional center. One occurrence of out-of-center behavior resulted in a cost of 10 minutes of special activity time for the children in that center. The frequency of out-of-center behaviors quickly decreased from baseline 1 to the modification 1 condition, increased when the modification condition was removed, and decreased again in modification 11. Observations made on the percent of the children's appropriate social and academic behaviors showed increases during the modification conditions. Also, the time the teacher spent in responding to inappropriate behavior decreased and the time spent in instruction increased during the modification conditions. (Author)

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Small Group Contingencies and Special Activity Times Used to Manage Behavior in a First Grade Classroom

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Concern for management procedures simultaneously applicable to many individuals has resulted in several studies designed to test the feasibility of different procedures. One effective procedure receiving current attention is based upon a generalization of reinforcement stated by Premack (1965). This generalization states that when the probability of any two responses is known, the more probable response will, when made contingent upon a less probable response, reinforce the less probable response. By making highly preferred activities available in classroom settings, investigators have been able to increase appropriate classroom behaviors (Homme, deBaca, Davine, Steinhorst and Rickert, 1963; Bushell, Wrobel, and Michaelis, 1968; Wasik, 1970).

An early applicable of this procedure was used by Homme, deBaca, Devine, Steinhorst, and Rickert (1963). When highly probable behaviors in a nursery school (such as running around a room and kicking a wastebasket) were made contingent upon less probable behaviors (sitting down and listening), the less probable behaviors increased.

In another preschool class, Bushell, Wrobel, and Michaelis (1968) made special events contingent upon study behaviors. After demonstrating an increase in study behavior during a contingency condition, they demonstrated the effectiveness of the contingency by removing it and study behavior decreased, then reintroducing the the contingency, and the study behavior increased.

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In one study in which the Premack generalization was used, a fifteen minute free-choice activity time in which toys, games, and crafts were available was made contingent upon appropriate academic and social behavior (Wasik, 1970). This procedure was in effect with all the second grade children in the study, but contingencies were employed on an individual basis. Appropriate behaviors increased when the contingencies were in effect and decreased when they were removed.

Packard (1970) also employed the Premack generalization in studies with kindergarten, third, fifth, and sixth grade children. In his studies, not only was the same procedure in effect for all children within a classroom, but it was required that the study behavior of all children be at an appropriate level for the group to receive access to reinforcing activities. Consequently by requiring that the performance criteria be met by an entire class, he was bringing peer pressure into effect. This, when using group contingencies, not only has the variable of the reinforcing activities, but also that of peer pressure. Both from informal observations and formal studies (Patterson, 1969) it is known that peer pressure can be effective in altering maladaptive classroom behavior.

The following study took place in a first grade classroom in which the instruction model called for children working in small groups to promote individualized instruction and peer teaching. Each of five groups of children was to rotate through five interest centers every day. However, the instructional model was not functioning smoothly, children did not remain in their interest centers or with the center task, they became involved in fighting peers, and continually interrupted the instructional activities of the teacher and teacher aide.

The teacher had requested assistance with one child described as being particularly disruptive. When this child was observed in the class setting, it became apparent, first, that his behavior was not much more disruptive than that of several other students and, second, the problems of this child could not be separated from the general problems of structure and contingencies existing in the classroom.

Thus, it was decided to implement a management procedure in the classroom, using the Premack generalization on reinforcement and small group contingencies. The objectives of the management procedure were first to arrange contingencies to decrease out-of-center behavior and then to arrange contingencies to increase appropriate behaviors for those children working in groups without an adult immediately present, and to increase the amount of time the teacher could spend in instructional interactions.

Method

Subjects. Twenty-five children in a first grade classroom in a rural southern community were the subjects in this study. There were six white boys, three black boys, fourteen white girls, and two black girls. Scores on the Primary Mental Abilities, obtained on these children during their first month of school ranged from 56 to 117, with an average of 91. The children were in federally financed Follow Through Programs in which at least 50 percent of the children were from families with incomes at or below the federally defined economic poverty level. Although this was a Follow Through classroom, Headstart had not been in operation the preceeding year and very few children had had a preschool experience.

Recording Procedure. The following data were collected: (1) a frequency count on the number of occurrences of out-of-center behavior, (2) the children's behavior recorded according to a coding system, (3) the interactions of the teacher and aide with the children.

Leaving an instructional center was defined as being completely out of the natural boundaries of a center in which case one would be either in another center or on a rug in the center of the room. Masking tape was placed on the floor at the beginning of modification I to establish boundaries when they were not obvious. When frequency of out-of-center behavior was recorded, it was taken during the thirty minutes an instruction period was in progress. Observations made by one of the authors and the teacher aide were used to obtain a measure of frequency of children

leaving instruction centers. Reliability estimates of consistency of observation on three different occasions between the two observers was 100 percent.

A modified version of the Coping Analysis Schedule for Educational Settings (CASES) (Spaulding, 1967) was used to code the children's behavior and is presented in Table 1. The CASES categories have been used successfully in studies by Sibley,

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Insert Table 1 About Here

Abbott, and Cooper (1969) and Wasik, Senn, Welch, and Cooper (1969). In this system all behavior can be categorized under 13 mutually exclusive categories. For this study the categories were subsumed under two headings: (1) appropriate, those behaviors the teachers wanted increased or maintained on a high level, and (2) inappropriate, those the teachers wanted decreased or maintained at a low level.

CASES data were collected at ten-second intervals by a paper, pencil, and stopwatch procedure. During each observation period, data were taken on five girls and five boys who were selected as representatives of the range of behaviors in the room. Three minutes of data were collected on each child covering a total of thirty minutes of behavior observed in the classroom. Their behavior was coded only when they were in an instructional center unattended by the teacher or teacher aide. Thus on some days the observer had to sit through as many as three instructional periods to obtain these data. If one of these ten children was absent, data were collected on a substitute for that day selected randomly from the class. Data were taken at the centers in which the teacher or aide was not present because most of the problem behaviors occurred in these centers. Data collected from the pairing of the observer with three other observers were used to provide indices of reliability. These consistency estimates ranged between 80 and 95 percent (Reliability - number agreements $\div$ number agreements + number disagreements x 100).

Data were collected also on the verbal and nonverbal teacher interactions coded according to the system presented in Table 2. Although data taken under each

Insert Table 2 About Here

category were coded further as verbal or nonverbal, these were combined in the data analysis because of the small occurrences of nonverbal interactions. Data on the Teacher Interaction Scale was recorded by category at fifteen second intervals using a paper, pencil, and stopwatch procedure. On data collection days, sixteen minutes of data were coded for both the teacher and the aide during the instructional periods. Six reliability estimates obtained between the observers ranged between 85 and 100 percent. Reliability measures were based upon ten minutes of classroom observation and were calculated according to the same formula for CASES reliabilities.

Experimental Design

Baseline I data on all three measures were taken on five days over a two week period. Out-of-center data were taken at different centers during the day to assess whether differences in leaving behavior occurred among the centers. Data from four of the five center times concurred with informal observations that this behavior persisted throughout the day. An observer could code out-of-center behavior while coding either the ten children on CASES or the teacher or aide. The observer began coding at the first center and continued until the ten children had been coded. Data collection on the teacher or aide was begun within five minutes after the beginning of a center and continued for sixteen minutes.

On the morning of the last day of baseline I, the teacher regrouped the children and placed the five children with the highest frequency of out-of-center behavior one to a group. She then appointed a chairman for each group. The children were normally regrouped in a heterogeneous manner every few weeks to increase the opportunities for peer teaching. When data were taken on the regrouping and appointment of chairmen, they did not differ from the other baseline I data.

Modification I. Each group earned thirty minutes of special activity time each afternoon, provided that everyone remained in his group setting during the five 30 minute groups. Each infraction resulted in ten minutes being subtracted from the

total special activity time so that a group lost all access to the special activity time if there were as many as three occurrences of out-of-center behavior for that group.

The special activity was a trip to the "white house," a small structure apart from the main school building. There they had access to many activities such as baking cookies, popping corn, and making tree ornaments.

The children were told that to earn time in the white house they were to work in their centers without leaving the center area unless given permission by the group chairman. If a pupil left without permission, or if the chairman gave permission for an inappropriate reason, that group lost ten of its thirty minutes. The children were given examples of situations in which it was appropriate to leave a group and were told that if such a situation occurred, they were to seek help from the aide.

At the end of each of the five instructional periods the aide went to each of the centers and asked the chairmen if everyone had remained in their center during the previous period. If so, a token, in the form of a decal (stars, bunnies, bears) was placed on a chart for that group. When the aide completed her round of groups, the teacher described to the class the status of each group in reference to the special activity time.

When a group could participate for only part of the time in special activities, they remained in the classroom with the teacher who supervised a writing assignment for the duration of the lost time. They then joined the others for the remainder of the thirty minutes special activities period.

During this modification condition, data on out-of-center behavior were taken for at least two centers a day for four days. On two of the four days CASES data and teacher data were also collected.

Baseline II. The special activity time was removed. The children were told that another class needed the "white house" for an activity. The chairmen were not asked whether everyone had remained in their groups. This condition was in effect for three days during which time data were collected on all three measures.

Modification II. This condition was like modification I except it was not possible for the class to have access to the "white house" every day. Instead, the special activity time was held in a section of the room where there were many items the children could have a choice of (e.g. cosmetics, a play house corner, blocks, and trucks). A screened off section of the room was improvised when necessary for those children who had not earned the entire thirty minutes. Seven days of data were taken on out-of-center behavior and four days of data were taken on CASES and teacher interaction data.

Follow-up. Eight weeks after the data collection of modification II, observations were collected for two days on the three measures.

Results and Discussion

During baseline I, median out-of-center behavior was 18.5 and ranged from 17 to 22 instances center. Observations made in four of the five centers showed that a high frequency of this behavior characterized all the instruction periods. The effect of the management procedure is demonstrated by the data presented in Table 3. Out-

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Insert Table 3 About Here

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of-center behavior was reduced immediately.

The results of baseline II are also seen in Table 3. It did not require more than a day to obtain the return of the target behavior and by the third day of this condition the frequency of leaving the centers was often as high as it had been during baseline I. The contingency condition was reinstated after three days.

Ten days of data were collected during modification II covering two centers per day. The effectiveness of the management procedure is again evident in the data in Table 3.

In Table 4 the percent of time ten children spent in appropriate behaviors is

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presented across all conditions. The amount of appropriate behavior taken over five days ranged from 53 to 68 with a mean of 63.2. On the first two days in modification I there was an increase of over 20 percentage points. During the following condition these data returned to their baseline I level; when modification II was introduced, the amount of time in appropriate behaviors increased again, and follow up data two months later also showed a high percent of appropriate behaviors.

Concomitant changes also were being recorded for interactions of the teacher and, to a lesser degree, of the aide. In Table 5 the percent of teacher and aide

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Insert Table 5 About Here

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combined verbal and nonverbal interactions are presented for each of five categories. During baseline I the teacher sometimes spent as much as 30 to 40 percent of her time redirecting children and disapproving of their behavior. During modification I her interactions in these two categories decreased and the amount of time she spent in neutral interactions (e.g. describing, explaining) increased. When the contingency condition was removed, her instructional interactions decreased and she spent more time in correcting children's behavior. Her interactions under modification II resembled those of modification I with more time devoted to desirable classroom interactions.

The aide showed a different pattern of interaction. In baseline I she spent much time in positive, neutral, and structuring interactions. The overlap of percentage points within categories precludes the possibility of making definitive statements about changes in her interactions under baseline and modification conditions. However, the trend is toward less redirecting and structuring and more neutral interactions when the modification conditions were in effect.

At this point one can summarize the effects of the modification conditions. Not only did out-of-center behavior decrease, but appropriate behaviors within the centers increased and time the two adults spent in instructional classroom interactions increased. These two results were not entirely expected when consequences

were arranged for out-of-center behavior. Initial plans called for observing the changes in behavior recorded by the scales for the children's and the teachers' behaviors and to implement additional procedures if the desired changes did not occur under modification I. One could raise the question of whether the changes in teacher behavior was bringing about the change in the pupils' behavior. That teacher attention was a probable factor in maintaining both out-of-center behaviors and other inappropriate behaviors was not questioned. That the teacher herself could have altered her own behavior without an imposed management system was unlikely at the time of this study. There were too many factors that mitigated against having the teacher focus on her own interactions. However, one cannot tell if the teachers' behaviors have changed qualitatively (e.g. no longer responding to inappropriate out-of-center behavior) or simply quantitatively (e.g. decreased redirecting and negative interactions to children because the children's inappropriate behaviors occurred less frequently).

In other classrooms it would be advantageous to attempt to assess the nature and degree of peer pressure. Comments made between children gave an indication that peer pressure was in effect in this study. A possible way of assessing such an effect is to switch between individual and group contingencies. Although peer pressure may be an important variable in group contingencies, individual contingencies applied in a group setting (Wasik, 1970) has also been shown to be extremely effective in managing classroom behavior.

Many researchers in applied classroom analysis are concerned, and justifiably so, with instructing teachers in basic principles of behavior modification. Such procedures, though, are time consuming and require the expense and expertise of a trainer. It should be noted that in the present study very little training was required for either the teacher or aide to implement the procedure. In applying the Premack generalization on reinforcing to entire classrooms, one has several advantages. (1) Often a target behavior can be selected which is easy to define and count. (2) An identical contingency can be used with all children, but the reinforcing events can vary, day-by-day and across children on the same day. (3) The teacher is focusing on the behavior of the child, a procedure often more acceptable to the teacher than focusing on her own behavior.

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Footnote

Appreciation is extended to the Durham Follow Through Program; to Elaine Simpson, program director; to Nancy Hill, teacher; and Jo Helms, teacher aide, who helped make this study possible. This study was conducted by the first author under the supervision of the second author as partial fulfillment of a course requirement. Part of this paper was presented at the American Psychological Association Meetings, Washington, D.C., September, 1971. Reprints may be obtained from Barbara Wasik, School of Education, University of North Carolina, Chapel Hill, North Carolina 27514.

List of Tables

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5. Percent of Time for Teacher and Aide in Each of the Five Interaction Categories.

Table 1

A Modified Version of the

Coping Analysis Schedule for Educational Settings[1]

APPROPRIATE

3a. Manipulating and Directing Others: Manipulating, commanding, or directing others appropriately; enforcing rules.

5a. Self-Directed Activity: Working independently, such as reading, writing, or constructing; continuing to work in the absence of immediate supervision.

6. Paying Rapt Attention: Listening attentively, watching carefully; concentrating on a story being told, a film being watched, a record player; thinking, pondering, reflecting.

7a. Sharing and Helping: Contributing ideas, interests, materials; helping others; initiating conversation.

8a. Social Interaction: Cooperative behavior, such as talking, studying, or playing with a peer.

9a. Seeking support, Assistance, and Information: Asking teachers or peers for help, support, direction or explanation.

10. Following Directions Passively and Submissively: Following requests, answering direct questions, working only with teacher supervision.

11a. Observing Passively: Watching others work, "checking on" activities of adults or peers.

INAPPROPRIATE

1. Aggressive Behavior: Direct attack: grabbing, pushing, hitting, pulling, kicking, name-calling; Destroying property: smashing, tearing, breaking.

2. Inappropriate attention-getting behavior: Activities which seem to result in attention from others, such as annoying, bothering, belittling, or criticizing others; noise-making or loud talking.

4. Resisting Authority: Physically resisting instructions or directions, for example--saying "I won't do it" and leaving the room. More than a 10 second delay in carrying out teacher's directions.

3b. 5b, 7b, 8b, 9b and 11b. These categories have the same definitions as those with corresponding numbers under the Appropriate heading, but are coded as inappropriate when they occur at other than the appropriate time or place.

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[1] Spaulding, Robert L. An Introduction to the Use of the Coping Analysis Schedule for Educational Settings (CASES).

Table 2

A Behavioral Classification of Teacher's

Verbal and Nonverbal Interaction

Positive (+) Interactions which approve of the behavior of the child.

Verbal - "That's good." "You are doing fine."
Nonverbal - Smile, hug, nod.

Neutral (N) Interactions related to academic work which explain, describe, clarify, grade, and instruct. Also includes describing behavioral contingencies.

Verbal: "This ball is blue." "Will you add these numbers?"
Nonverbal: Listening to a child.

Structure (S) Interactions which direct, define procedures and objectives and set limits.

Verbal: "You may go to the library for 30 minutes."
Nonverbal: A gesture, facial expression or other physical response which directs a child.

Redirection (R) Neutral interactions with which the teacher directs a child from an inappropriate behavior to an appropriate behavior.

Verbal: "You are supposed to be reading instead of coloring."
Nonverbal: A gesture, facial expression, or other physical responses which redirect a child's behavior.

Negative (-) Interactions that disapprove of a child's behavior. Verbalizations may be defined by strong emphasis or harsh tones.

Verbal: "Stop that!" "Don't do that!"
Nonverbal: Physical restraint, spanking, frowns, and other gestural and facial responses which disapprove of a child's behavior.

Ignore (I) A nonverbal behavior in which the teacher does not respond to the child's behavior when he is seeking her attention.

The teacher may turn away or look away when a student makes a funny face, laughs, or calls loudly across the room, goes to the teacher's desk, or asks the teacher a question.

Table 3

Mean and Range of Out-of-Center

Behavior for Each Condition

Condition	Number of Times of Data Collection	Mean	Range
Baseline I	8	19.25	17-22
Modification I	14	.14	0-1
Baseline II	5	11.20	0-18
Modification II	18	.28	0-2
Follow-up	7	.14	0-1

Table 4

Percent of Time in Appropriate Behavior

by Days for Each Condition

Baseline I Day Mean	Modification I Day Mean	Baseline II Day Mean	Modification II Day Mean	Follow Up Day Mean
1 60%	9 80%	13 62%	24 80%	88%
2 68%	10 83%	14 52%	28 88%	94%
5 58%		15 60%	29 89%	
6 62%			30 92%	
8 68%				

Table 5

Percent of Time for Teacher and Aide in

Each of the Five Interaction Categories

	Teacher					Aide				
Day	+	N	S	R	-	+	N	S	R	-
							Baseline I			
1	19%	46%	18%	11%	6%		(Aide was absent)			
2	12%	38%	9%	30%	11%	18%	68%	12%	2%	
5	6%	18%	43%	27%	6%	6%	56%	33%	5%	
6	13%	59%	22%	6%			70%	27%	3%	
8		15%	52%	27%	6%	6%	48%	40%	6%	
							Modification I			
9	3%	70%	24%	3%		9%	73%	18%		
10	18%	76%	6%			6%	82%	6%	6%	
							Baseline II			
13	6%	58%	30%	6%		6%	58%	30%	6%	
14	6%	46%	21%	18%	9%		63%	37%		
15	(Reading group out of Room)					9%	91%			
							Modification II			
24	3%	67%	24%	3%	3%		(Aide was absent)			
28	9%	82%	9%			6%	73%	21%		
29	4%	80%	12%	4%		5%	82%	12%	1%	
30	6%	71%	17%	6%		6%	76%	15%	3%	
							Follow Up			
	4%	83%	10%	3%		2%	96%	2%		
	6%	80%	2%	3%		6%	88%	6%		